Analytical Data Package Prepared For

Pacific Northwest National Lab

Radiochemical Analysis By

STL Richland STLRL

2800 G.W. Way, Richland Wa, 99354, (509)-375-3131.

Data Package Contains _____ Pages

Report Nbr: 32770

SDG Nbr	ORDER Nbr	CLIENT ID NUMBER	LOT Nbr	WORK ORDER	RPT DB ID	BATCH
W04891B	W06-002	B1HC79	J6G060225-1	H8QQ01AA	9H8QQ010	6191194
		B1HC79	J6G060225-1	H8QQ01AC	9H8QQ010	6191191

Comments:

SEVERN TRENT STL

STL Richland
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Richland, WA 99354

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Certificate of Analysis

Pacific Northwest National Laboratories
Sigma V Building
Richland, WA 99352

July 21, 2006

Attention: Dot Stewart

SAF Number	:	W06-002
Date SDG Closed	:	March 29, 2006
Number of Samples	:	One (1)
Sample Type	:	Water
SDG Number	:	W04891B
Data Deliverable	:	15-Day / Priority

CASE NARRATIVE

I. Introduction

On July 6, 2006, a request for reanalysis of one water sample was received at STL Richland (STLR). Upon receipt, the sample was assigned the following laboratory ID number to correspond with the Pacific Northwest National Laboratories (PGW) specific ID:

PGW ID#	STLR ID#	MATRIX	DATE OF RECEIPT
B1HC79	H8QQ0 (H1WP3)	WATER	3/23/06

II. Sample Receipt

The samples were received in good condition and no anomalies were noted during check-in.

III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

The requested analyses were:

Gas Proportional Counting
Gross Beta by method RICH-RC-5014
Liquid Scintillation Counting
Technetium-99 by TEVA method RICH-RC-5065

IV. Quality Control

The analytical results for each analysis performed includes a minimum of one laboratory control sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

V. Comments

Gas Proportional Counting
Gross Beta by method RICH-RC-5014:
The reanalysis results not are within RER acceptance criteria. The LCS, batch blank, samples and sample duplicate (B1HC79) results are within contractual requirements.

Liquid Scintillation Counting
Technetium-99 by TEVA method RICH-RC-5065:
The reanalysis results are within RER acceptance criteria. The LCS, batch blank, samples, sample duplicate (B1HC79), and sample matrix spike (B1HC79) results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a designee as verified by the following signature.

Reviewed and approved:

Sandra Segen

Sherryl A. Adam
for Project Manager

Drinking Water Method Cross References

	DRINKING WATER ASTM METHOD CROSS REFERENCES	
Referenced Method	**Isotope(s)**	**STL Richland's SOP number**
EPA 901.1	Cs-134, I-131	RICH-RC-5017
EPA 900.0	Alpha & Beta	RICH-RC-5014
EPA 903.1	Ra-226	RICH-RC-5005
EPA 904.0	Ra-228	RICH-RC-5005
EPA 905.0	Sr89/90	RICH-RC-5006
ASTM D2460	Total Radium	RICH-RC-5027
Standard Method 7500-U-C & ASTM D5174	Uranium	RICH-RC-5058
EPA 906.0	Tritium	RICH-RC-5007
NOTE:		
The Gross Alpha LCS is prepared with Am-241 (unless otherwise specified in the case narrative)		
The Gross Beta LCS is prepared with Sr/Y-90 (unless otherwise specified in the case narrative)		

Uncertainty Estimation

STL Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, R = constants * f(x,y,z,...). The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties (u_i) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty (u_c) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value (S/vn), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

Report Definitions

Action Lev	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or STL Richland.
Count Error (#s)	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
Total Uncert (#s) ***u_c – Combined Uncertainty.***	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, *u_c the combined uncertainty*. The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
CRDL (RL)	Contractual Required Detection Limit as defined in the Client's Statement Of Work or STL Richland "default" nominal detection limit. Often referred to the reporting level (RL)
Lc	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. Lc=(1.645 * Sqrt(2*(BkgrndCnt/BkgrndCntMin)/SCntMin)) * (ConvFct/(Eff*Yld*Abn*Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
Lot-Sample No	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
MDC|MDA	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. MDC = (4.65 * Sqrt((BkgrndCnt/BkgrndCntMin)/SCntMin) + 2.71/SCntMin) * (ConvFct/(Eff * Yld * Abn * Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
Rst/MDC	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Rst/TotUcert	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the **Work Order** Number.
RER	The equation Replicate Error Ratio = (S-D)/[sqrt($TPUs^2$ + $TPUd^2$)] as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
SDG	Sample Delivery Group Number assigned by the Client or assigned by STL Richland upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

STL Richland Report

Lab Code: STLRL

FormNbr: R FormatType: FEAD Version: 05 Rpt Nbr: 32770 File Name: h:\Reportdb\edd\FeadIV\Rad\W04891B.Edd, h:\Reportdb\edd\FeadIV\Rad\32770.E

Lab Sample Id:	Client Id:	Test User	Contract Nbr	SAF Nbr	Sdg Nbr:	QC Type:	Moisture/ Solids%*:	Distilled Volume	Sample On Date:	Collection Date:
9H8QQ010	B1HC79		MW6-SBB-A1	W06-002	W04891B					03/23/2006 09:09

Batch	Analyte	CAS#	Result	Unit	CntU 2S	TotU 2S	Qual	MDA	TrcYield	Method	Alq Size	Unit	Analy Date/Time	Act
6191194	BETA	12587-47-2	1.95E+02	pCi/L	1.6E+01	2.9E+01		1.38E+01	100.0	9310_ALPHABETA	4.11E-02	L	07/20/200 12:56	I
6191191	TC-99	14133-76-7	5.79E+02	pCi/L	1.4E+01	4.0E+01		9.92E+00	100.0	TC99_ETVDSK_LS	1.251E-01	L	07/19/200 21:51	I

U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).
B Qual- Analyte was found in the associated laboratory blank above the MDC.

STL Richland QC Blank Report

Lab Code: STLRL

FormNbr: R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W04891B.Edd, h:\Reportdb\edd\FeadIV\Rad\32770.E

Lab Sample Id:	H8W0F1AB	**Sdg/Rept Nbr:**	W04891B	32770	**Collection Date:** 03/23/2006 09:09
Client Id:	NA	**Matrix:**	WATER	WATER	**Sample On Date:**
Moisture/Solids%*:		**QC Type:**	BLK		**Received Date:** 07/06/2006

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	FSuffix	RTyp
	MW6-SBB-A19981								AE	H

Batch # / Qc Type	Analyt/ CAS#	Result/ Orig Rst	Unit	Tot/Cnt Uncert 2S	Qu-al	MDC	Tracer Yield	Spk Conc/ %Rec	Analy Method	Aliq Size/	Date/Time Analyzed	RPD/ UCL	RER/ UCL	LCS LCL/UCL	R Typ
6191191	TC-99	2.19E-01	pCi/L	5.8E+00	U	9.84E+00	100.0		TC99_ETVDSK	1.259E-01	07/20/2006				D
BLK	14133-76-7			4.1E+00						L	00:59				

U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).
B Qual- Analyte was found in the associated laboratory blank above the MDC.

STL Richland QC Blank Report

Lab Code: STLRL

FormNbr: R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W04891B.Edd, h:\Reportdb\edd\FeadIV\Rad\32770.E

Lab Sample Id:	H8W0M1AB	**Sdg/Rept Nbr:**	W04891B	32770	**Collection Date:** 03/23/2006 09:09
Client Id:	NA	**Matrix:**	WATER	WATER	**Sample On Date:**
Moisture/Solids%*:		**QC Type:**	**BLK**		**Received Date:** 07/06/2006

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	FSuffix	RTyp
	MW6-SBB-A19981								AG	H

Batch # / Qc Type	Analyt/ CAS#	Result/ Orig Rst	Unit	Tot/Cnt Uncert 2S	Qu-al	MDC	Tracer Yield	Spk Conc/ %Rec	Analy Method	Aliq Size/	Date/Time Analyzed	RPD/ UCL	RER/ UCL	LCS LCL/UCL	R Typ
6191194	BETA	1.04E+00	pCi/L	1.3E+00	U	2.59E+00	100.0		9310_ALPHAB	1.996E-01	07/20/2006				D
BLK	12587-47-2			1.2E+00						L	12:56				

U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).
B Qual- Analyte was found in the associated laboratory blank above the MDC.

Lab Sample Id: H8W0F1CS **Sdg/Rept Nbr:** W04891B 32770 **Collection Date:** 03/23/2006 09:09

Client Id: NA **Matrix:** WATER WATER **Sample On Date:**

Moisture/Solids%*: **QC Type:** BS **Received Date:** 07/06/2006

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	FSuffix	RTyp
	MW6-SBB-A19981								AF	H

Batch # / Qc Type	Analyt/ CAS#	Result/ Orig Rst	Unit	Tot/Cnt Uncert 2S	Qu-al	MDC	Tracer Yield	Spk Conc/ %Rec	Analy Method	Aliq Size/	Date/Time Analyzed	RPD/ UCL	RER/ UCL	LCS LCL/UCL	R Typ
6191191	TC-99	5.02E+02	pCi/L	3.6E+01		9.83E+00	100.0	5.37E+02	TC99_ETVDSK	1.263E-01	07/20/2006			70	D
BS	14133-76-7			1.3E+01				93.5		L	02:02			130	

U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).
B Qual- Analyte was found in the associated laboratory blank above the MDC.

STL Richland QC Control Sample Report

Lab Code: STLRL

FormNbr: R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W04891B.Edd, h:\Reportdb\edd\FeadIV\Rad\32770.E

Lab Sample Id:	H8W0M1CS	**Sdg/Rept Nbr:**	W04891B	32770	**Collection Date:** 03/23/2006 09:09
Client Id:	NA	**Matrix:**	WATER	WATER	**Sample On Date:**
Moisture/Solids%*:		**QC Type:**	BS		**Received Date:** 07/06/2006

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	FSuffix	RTyp
	MW6-SBB-A19981								AH	H

Batch # / Qc Type	Analyt/ CAS#	Result/ Orig Rst	Unit	Tot/Cnt Uncert 2S	Qu-al	MDC	Tracer Yield	Spk Conc/ %Rec	Analy Method	Aliq Size/	Date/Time Analyzed	RPD/ UCL	RER/ UCL	LCS LCL/UCL	R Typ
6191194	BETA	2.60E+01	pCi/L	4.4E+00		2.95E+00	100.0	2.28E+01	9310_ALPHAB	2.012E-01	07/20/2006			70	D
BS	12587-47-2			2.7E+00				114.3		L	12:56			130	

U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).
B Qual- Analyte was found in the associated laboratory blank above the MDC.

STL Richland QC Duplicate Report

Lab Code: STLRL

FormNbr: R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W04891B.Edd, h:\Reportdb\edd\FeadIV\Rad\32770.E

Lab Sample Id:	H8QQ01ER	**Sdg/Rept Nbr:**	W04891B	32770	**Collection Date:** 03/23/2006 09:09
Client Id:	B1HC79	**Matrix:**	WATER	WATER	**Sample On Date:**
Moisture/Solids%*:		**QC Type:**	DUP		**Received Date:** 07/06/2006

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	FSuffix	RTyp
W06-002	MW6-SBB-A19981								AC	H

Batch # / Qc Type	Analyt/ CAS#	Result/ Orig Rst	Unit	Tot/Cnt Uncert 2S	Qu-al	MDC	Tracer Yield	Spk Conc/ %Rec	Analy Method	Aliq Size/	Date/Time Analyzed	RPD/ UCL	RER/ UCL	LCS LCL/UCL	R Typ
6191191	TC-99	6.11E+02	pCi/L	4.2E+01		1.00E+01	100.0		TC99_ETVDSK	1.248E-01	07/19/2006	5.3	1.1		D
DUP	14133-76-7	5.79E+02		1.4E+01						L	23:57	20.0	3		

U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).
B Qual- Analyte was found in the associated laboratory blank above the MDC.

Lab Sample Id: H8QQ01FR **Sdg/Rept Nbr:** W04891B 32770 **Collection Date:** 03/23/2006 09:09

Client Id: B1HC79 **Matrix:** WATER WATER **Sample On Date:**

Moisture/Solids%*: **QC Type:** DUP **Received Date:** 07/06/2006

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	FSuffix	RTyp
W06-002	MW6-SBB-A19981								AD	H

Batch # / Qc Type	Analyt/ CAS#	Result/ Orig Rst	Unit	Tot/Cnt Uncert 2S	Qu-al	MDC	Tracer Yield	Spk Conc/ %Rec	Analy Method	Aliq Size/	Date/Time Analyzed	RPD/ UCL	RER/ UCL	LCS LCL/UCL	R Typ
6191194	BETA	1.86E+02	pCi/L	2.8E+01		1.38E+01	100.0		9310_ALPHAB	4.08E-02	07/20/2006	4.7	0.5		D
DUP	12587-47-2	1.95E+02		1.5E+01						L	12:56	20.0	3		

U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).
B Qual- Analyte was found in the associated laboratory blank above the MDC.

STL Richland Qc Matrix Spike Report

Lab Code: STLRL

FormNbr: R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W04891B.Edd, h:\Reportdb\edd\FeadIV\Rad\32770.E

Lab Sample Id:	H8QQ01DW	**Sdg/Rept Nbr:**	W04891B	32770	**Collection Date:** 03/23/2006 09:09
Client Id:	B1HC79	**Matrix:**	WATER	WATER	**Sample On Date:**
Moisture/Solids%*:		**QC Type:**	**MS**		**Received Date:** 07/06/2006

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	FSuffix	RTyp
W06-002	MW6-SBB-A19981								AB	H

Batch # / Qc Type	Analyt/ CAS#	Result/ Orig Rst	Unit	Tot/Cnt Uncert 2S	Qu-al	MDC	Tracer Yield	Spk Conc/ %Rec	Analy Method	Aliq Size/	Date/Time Analyzed	RPD/ UCL	RER/ UCL	LCS LCL/UCL	R Typ
6191191	TC-99	3.84E+03	pCi/L	2.4E+02		9.83E+00	100.0	3.54E+03	TC99_ETVDSK	1.263E-01	07/19/2006			60	D
MS	14133-76-7			3.4E+01				108.3		L	22:54			140	

U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).
B Qual- Analyte was found in the associated laboratory blank above the MDC.

SEVERN TRENT STL

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

7/21/2006 10:13:29 AM

Lot No., Due Date: J6G060225; 07/21/2006

Client, Site: 384868; PGW 615HANFORD HANFORD

QC Batch No., Method Test: 6191194; RBETA-SR Beta by GPC-Sr/Y

SDG, Matrix: W04891B; WATER

	Yes	No	N/A
1.0 COC			
1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?	✓		
2.0 QC Batch			
2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	✓		
2.2 Are the QC appropriate for the analysis included in the batch?	✓		
2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?	✓		
2.4 Does the Worksheets include a Tracer Vial label for each sample?	✓		
3.0 QC & Samples			
3.1 Is the blank results, yield, and MDA within contract limits?	✓		
3.2 Is the LCS result, yield, and MDA within contract limits?	✓		
3.3 Are the MS/MSD results, yields, and MDA within contract limits?			✓
3.4 Are the duplicate result, yields, and MDAs within contract limits?	✓		
3.5 Are the sample yields and MDAs within contract limits?	✓		
4.0 Raw Data			
4.1 Were results calculated in the correct units?	✓		
4.2 Were analysis volumes entered correctly?	✓		
4.3 Were Yields entered correctly?			✓
4.4 Were spectra reviewed/meet contractual requirements?	✓		
4.5 Were raw counts reviewed for anomalies?	✓		
5.0 Other			
5.1 Are all nonconformances included and noted?			✓
5.2 Are all required forms filled out?	✓		
5.3 Was the correct methodology used?	✓		
5.4 Was transcription checked?	✓		
5.5 Were all calculations checked at a minimum frequency?	✓		
5.6 Are worksheet entries complete and correct?	✓		

6.0 Comments on any No response:

First Level Review Thomas E Markland **Date** 7/21/06

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 191194
W048918

Review Item	Yes (√)	No (√)	N/A (√)
A. Sample Analysis 1. Are the sample yields within acceptance criteria?	✓		
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
B. QC Samples 1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery with contract acceptance criteria?	✓		
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
8. Do the MS/MSD results and yields meet acceptance criteria?			✓
9. Do the duplicate sample results and yields meet acceptance criteria?	✓		
C. Other 1. Are all Nonconformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: _____

Second Level Review: Sherryl A Adams Date: 7-21-06

SEVERN TRENT STL

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

7/20/2006 2:35:43 PM

Lot No., Due Date: J6G060225; 07/21/2006

Client, Site: 384868; PGW 615HANFORD HANFORD

QC Batch No., Method Test: 6191191; RTC99 Tc-99 by LSC

SDG, Matrix: W04891B; WATER

	Yes	No	N/A
1.0 COC			
1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?	✓		
2.0 QC Batch			
2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	✓		
2.2 Are the QC appropriate for the analysis included in the batch?	✓		
2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?	✓		
2.4 Does the Worksheets include a Tracer Vial label for each sample?	✓		
3.0 QC & Samples			
3.1 Is the blank results, yield, and MDA within contract limits?	✓		
3.2 Is the LCS result, yield, and MDA within contract limits?	✓		
3.3 Are the MS/MSD results, yields, and MDA within contract limits?	✓		
3.4 Are the duplicate result, yields, and MDAs within contract limits?	✓		
3.5 Are the sample yields and MDAs within contract limits?	✓		
4.0 Raw Data			
4.1 Were results calculated in the correct units?	✓		
4.2 Were analysis volumes entered correctly?	✓		
4.3 Were Yields entered correctly?			✓
4.4 Were spectra reviewed/meet contractual requirements?	✓		
4.5 Were raw counts reviewed for anomalies?	✓		
5.0 Other			
5.1 Are all nonconformances included and noted?			✓
5.2 Are all required forms filled out?	✓		
5.3 Was the correct methodology used?	✓		
5.4 Was transcription checked?	✓		
5.5 Were all calculations checked at a minimum frequency?	✓		
5.6 Are worksheet entries complete and correct?	✓		

6.0 Comments on any No response:

First Level Review Steven E. Richard **Date** 7/20/06

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 6191191
WO 48918

Review Item	Yes (√)	No (√)	N/A (√)
A. Sample Analysis			
1. Are the sample yields within acceptance criteria?	/		
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	/		
3. Are the correct isotopes reported?	/		
B. QC Samples			
1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	/		
2. Does the blank result meet the Contract criteria?	/		
3. Is the blank result < the Contract Detection Limit?	/		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			/
5. Is the LCS recovery with contract acceptance criteria?	/		
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	/		
8. Do the MS/MSD results and yields meet acceptance criteria?			/
9. Do the duplicate sample results and yields meet acceptance criteria?	/		
C. Other			
1. Are all Nonconformances included and noted?			/
2. Are all required forms filled out?	/		
3. Was the correct methodology used?	/		
4. Was transcription checked?	/		
5. Were all calculations checked at a minimum frequency?	/		
6. Were units checked?	/		

Comments on any "No" response: _____

Second Level Review: Sheryl A Adam Date: 7-21-06

J6G060225

W04891B

B1HC79

TC99_ETV OSK

Alpha

Beta

Rcv'd 7/6/06

Due 7/21/06

07/06/2006

RECHECK, RECOUNT, OR REANALYSIS ORDER
CONTRACT NO MW6-SBB-

Severn Trent
2800 George Washington
Richland, WA 99354

Battelle PNNL Order 060706STLRL-R3495

Sample Delivery W04891 and W04902

Special The gross alpha/beta samples are for beta only.

Samples(s

Lab Sample ID	PNNL Sample	Action	TAT	METHOD_NAME
9H1WP310	B1HC79	Reanalysis	15/15	TC99_ETVDSK_LS
9H1WP310	B1HC79	Reanalysis	15/15	9310_ALPHABETA
9H3GRE10	B1HVY5	Reanalysis	15/15	9310_ALPHABETA

H8990

Deliver Report Results Dorothy L. Stewart, K6-96

c/o Secretary
3110 Port of Benton Blvd.

The report results must reference the Battelle PNNL-order number, SDG number, and the Battelle PNNL sample identification number shown above.

Seger, Sandra

From: Adam, Sherryl
Sent: Thursday, July 06, 2006 9:06 AM
To: Seger, Sandra
Subject: FW: Request for Recheck, Recount, or Reanalysis Order

Attachments: 060706STLRLR3495.rtf

060706STLRLR3495
.rtf (12 KB)

-----Original Message-----
From: Hampt, Heidi [mailto:heidi.hampt@pnl.gov]
Sent: Thursday, July 06, 2006 9:05 AM
To: Adam, Sherryl
Cc: Stewart, Dorothy L
Subject: Request for Recheck, Recount, or Reanalysis Order

<<060706STLRLR3495.rtf>>
Sherryl,

Again, my RDR system grouped together samples from different SDGs. I'm not sure what the problem is, but I will try to fix in the future.

Thanks,
Heidi

STL RICHLAND

PNNL JGC240121
SDG# ~~W04890~~ W04891
DUE 5/8/06
SW 3-24-06

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # **W06-002-11**

Page 1 of 1

Collector DURATEK ~~R.T. SICKLE~~	**Contact/Requester** Dot Stewart	**Telephone No.** 509-376-5056 **MSIN** **FAX**
SAF No. W06-002	**Sampling Origin** Hanford Site	**Purchase Order/Charge Code**
Project Title RCRA, February 2006	DTS-SAWS-H103B	**Ice Chest No.** SAWS-120 **Temp.**
Shipped To (Lab) Severn Trent Incorporated, Richland	**Method of Shipment** Govt. Vehicle	**Bill of Lading/Air Bill No.**
Protocol RCRA	**Priority:** 45 Days	**Offsite Property No.**

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐
Batch all PNNL GW samples submitted under "W", "S", "I", "A" or "G" 06 SAFs into one SDG, not to exceed SDG closure of 14 days.
Submit invoices & deliverables to DL Stewart, PNNL

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B1HC79		W	3-23-06	0909	1x20-mL P	Activity Scan HIWP3	None
B1HC79		W			1x500-mL G/P	UTOT_KPA: Uranium (1)	HNO3 to pH <2
B1HC79		W			1x1000-mL P	906.0_H3_LSC: Tritium (1)	None
B1HC79		W			1x1000-mL P	9310_ALPHABETA_GPC: Gross Beta (1)	HNO3 to pH <2
B1HC79		W			1x4000-mL G/P	GAMMALL_GS: List-1 (9)	HNO3 to pH <2
B1HC79		W			1x500-mL P	TC99_ETVDSK_LSC: Tc-99 (1)	HCl to pH <2

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
DURATEK R.T. SICKLE			MAR 23 2006 1430	DAVID HARBISON			MAR 23 2006 1430
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SI = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time

89 8

7/18/2006 7:55:24 AM

Sample Preparation/Analysis

Balance Id:1120482733

384868, Pacific Northwest National Laboratory , Pacific Northwest National Lab

BC Gross Beta PrpRC5014
S8 Gross Beta by GPC using Sr/Y-90 curve
5I CLIENT: HANFORD PRIORITY

Pipet #: 229

AnalyDueDate: 07/21/2006 W0489/A

Sep1 DT/Tm Tech:

Batch: 6191194 WATER pCi/L PM, Quote: HC , 57671

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: RutherfordJ Scott

Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
1 H8QQ0-1-AA J6G060225-1-SAMP 03/23/2006 09:09	41.10g,in AmtRec: 2XLP	#Containers: 2		1.5	58.5	100	302 Scr:	1345 Alpha:	7/20/06 Beta:	
2 H8QQ0-1-AF-X J6G060225-1-DUP 03/23/2006 09:09	40.80g,in AmtRec: 2XLP	#Containers: 2			59.8		305 Scr:	Alpha:	Beta:	
3 H8W0M-1-AA-B J6G100000-194-BLK 03/23/2006 09:09	199.60g,in AmtRec:	#Containers: 1			0.1		30C Scr:	Alpha:	Beta:	
4 H8W0M-1-AC-C J6G100000-194-LCS 03/23/2006 09:09	201.20g,in AmtRec:	#Containers: 1	BESB2862 07/06/06,pd 12/28/05,r		0.6		30D Scr:	Alpha:	Beta:	

Comments: H8QQ0-SAMP "Comments: Reduced aliquots on sample H8QQ0 due to wt. screen activity. jhr 07/18/06"

pH<2.0 JHR 7/18/06

All Clients for Batch:
384868, Pacific Northwest National Laboratory Pacific Northwest National Lab, HC , 57671

H8QQ01AA-SAMP Constituent List:

BETA	RDL:4.00E+00	pCi/L	LCL:	UCL:	RPD:
H8W0M1AA-BLK:					
BETA	RDL:4.00E+00	pCi/L	LCL:	UCL:	RPD:
H8W0M1AC-LCS:					
Sr-90	RDL:	pCi/L	LCL:70	UCL:130	RPD:20

ICOC Fraction Transfer/Status Report

ByDate: 7/21/2005, 7/26/2006, Batch: '6191194', User: *ALL Order By DateTimeAccepting

Q	Batch	Work Ord	CurStatus	Accepting			Comments
6191194							
AC			**CalcC**	**RutherfordJ**	7/13/2006 12:09:37		
SC				wagarr	IsBatched	7/10/2006 9:28:13 AM	ICOC_RADCALC v4.8.24
SC				RutherfordJ	InPrep	7/13/2006 12:09:37 PM	RICH-RC-5016 REVISION 6
SC				RutherfordJ	Prep1C	7/18/2006 7:55:56 AM	RICH-RC-5014 REVISION 6
SC				ScottM	InPrep2	7/18/2006 9:12:19 AM	RICH-RC-5014 REVISION 6
SC				ScottM	Prep2C	7/20/2006 11:25:45 AM	RICH-RC-5014 REVISION 6
SC				BlackCL	InCnt1	7/20/2006 11:37:01 AM	RICH-RD-0003 REVISION 4
SC				DAWKINSO	CalcC	7/20/2006 10:44:14 PM	RICH-RD-0003 REVISION 4
AC				**RutherfordJ**	7/18/2006 7:55:56		
AC				**ScottM**	7/18/2006 9:12:19		
AC				**ScottM**	7/20/2006 11:25:45		
AC				**BlackCL**	7/20/2006 11:37:01		
AC				**DAWKINSO**	7/20/2006 10:44:14		

AC: Accepting Entry; SC: Status Change

7/17/2006 4:33:43 PM

Sample Preparation/Analysis

Balance Id:1120482733

384868, Pacific Northwest National Laboratory , Pacific Northwest National Lab

FP Tc-99 Prp/SepRC5065
S5 Technetium-99 by Liquid Scint
5I CLIENT: HANFORD

Pipet #: _____

AnalyDueDate: 07/21/2006 W049818

PRIORITY

Sep1 DT/Tm Tech:

Batch: 6191191 **WATER** **pCi/L**

PM, Quote: HC , 57671

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: ,RutherfordJ

Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
1 H8QQ0-1-AC J6G060225-1-SAMP 03/23/2006 09:09		AmtRec: 2XLP	125.10g,in	125.10g #Containers: 2		60	Scr:	Alpha:	Beta:	
2 H8QQ0-1-AD-S J6G060225-1-MS 03/23/2006 09:09		AmtRec: 2XLP	126.30g,in	126.30g #Containers: 2	TCSG1660 07/14/06,pd 01/10/06,r	60	Scr:	Alpha:	Beta:	
3 H8QQ0-1-AE-X J6G060225-1-DUP 03/23/2006 09:09		AmtRec: 2XLP	124.80g,in	124.80g #Containers: 2		60	Scr:	Alpha:	Beta:	
4 H8W0F-1-AA-B J6G100000-191-BLK 03/23/2006 09:09		AmtRec:	125.90g,in	125.90g #Containers: 1		60	Scr:	Alpha:	Beta:	
5 H8W0F-1-AC-C J6G100000-191-LCS 03/23/2006 09:09		AmtRec:	126.30g,in	126.30g #Containers: 1	TCSE1977 06/30/06,pd 01/10/06,r	60	Scr:	Alpha:	Beta:	
6 H8W0F-1-AD-BN J6G100000-191-IBLK 03/23/2006 09:09		AmtRec:		 #Containers: 1		60	Scr:	Alpha:	Beta:	

Sample Preparation/Analysis

FP Tc-99 Prp/SepRC5065
S5 Technetium-99 by Liquid Scint
5I CLIENT: HANFORD

Balance Id:
Pipet #:
Sep1 DT/Tm Tech:
Sep2 DT/Tm Tech:
Prep Tech:

AnalyDueDate: 07/21/2006

Batch: 6191191 **pCi/L**
SEQ Batch, Test: None

Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:

Comments: pH < 2.0 JHR 7/17/06

All Clients for Batch:
384868, Pacific Northwest National Laboratory Pacific Northwest National Lab, HC , 57671

H8QQ01AC-SAMP Constituent List:
Tc-99 RDL:15 pCi/L LCL:70 UCL:130 RPD:20
H8QQ01AD-MS Constituent List:

H8W0F1AA-BLK:
Tc-99 RDL:15 pCi/L LCL: UCL: RPD:
H8W0F1AC-LCS:
Tc-99 RDL:15 pCi/L LCL:70 UCL:130 RPD:20
H8W0F1AD-IBLK:
Tc-99 RDL:15 pCi/L LCL: UCL: RPD:

H8QQ01AC-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
H8QQ01AD-MS Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
H8W0F1AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
H8W0F1AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
H8W0F1AD-IBLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

Approved By _____ Date: _____

ICOC Fraction Transfer/Status Report

ByDate: 7/20/2005, 7/25/2006, Batch: '6191191', User: *ALL Order By DateTimeAccepting

Q	Batch	Work Ord	CurStatus	Accepting			Comments
6191191							
AC			**CalcC**	**RutherfordJ**	7/17/2006 3:42:33 PM		
SC				wagarr	IsBatched	7/10/2006 9:28:13 AM	ICOC_RADCALC v4.8.24
SC				RutherfordJ	InPrep	7/17/2006 3:42:33 PM	RICH-RC-5016 REVISION 6
SC				RutherfordJ	Prep1C	7/17/2006 4:34:43 PM	RICH-RC-5016 REVISION 6
SC				AndersonE	Sep1C	7/19/2006 11:19:39 AM	RICH-RC-5065 REV5
SC				BlackCL	InCnt1	7/19/2006 11:41:52 AM	RICH-RD-0001 REVISION 3
SC				BlackCL	CalcC	7/20/2006 8:31:38 AM	RICH-RD-0001 REVISION 3
AC				**RutherfordJ**	7/17/2006 4:34:43 PM		
AC				**AndersonE**	7/19/2006 11:19:39		
AC				**BlackCL**	7/19/2006 11:41:52		
AC				**BlackCL**	7/20/2006 8:31:38		

AC: Accepting Entry; SC: Status Change